

IN THE CLAIMS

- 1 1. (previously presented) A memory system comprising:
2 a first memory controller;
3 a first memory component;
4 a first address and control bus connected to the first memory controller and the first
5 memory component, the first address and control bus including a plurality of
6 signal conductors that extend from the first memory controller to the first
7 memory component; and
8 a first data bus connected to the first memory controller and to the first memory
9 component, wherein the first data bus uses differential signaling and has a
10 first data bus symbol time that is shorter than a first address and control bus
11 symbol time of the first address and control bus.
- 1 2. (original) The memory system of claim 1 further comprising:
2 a second memory component connected to the first address and control bus and to
3 the first data bus.
- 1 3. (original) The memory system of claim 1 further comprising:
2 a second memory component connected to the first address and
3 control bus; and
4 a second data bus connected to the first memory controller and to the second
5 memory component, wherein the second data bus uses differential signaling
6 and has a second data bus symbol time that is shorter than the first address
7 and control bus symbol time of the first address and control bus.

1 4. (original) The memory system of claim 1 wherein a quotient of the first data bus
2 symbol time divided by the first address and control bus symbol time is less than or
3 equal to 1/8.

1 5. (previously presented) A memory system comprising:
2 a first memory controller;
3 a first memory component;
4 a first address and control bus connected to the first memory controller and to the
5 first memory component, the first address and control bus including a
6 plurality of signal conductors that extend from the first memory controller to
7 the first memory component;
8 a first clock signal conductor connected to the first memory controller and to the
9 first memory component; and
10 a first data bus connected to the first memory controller and to the first memory
11 component, wherein the first data bus has a first data bus symbol time that is
12 shorter than a first address and control bus symbol time of the first address
13 and control bus and wherein the first address and control bus symbol time is
14 shorter than a first clock signal cycle time of the first clock signal.

1 6. (original) The memory system of claim 5 further comprising:
2 a second memory component connected to the first address and control bus, to the
3 first clock signal conductor, and to the first data bus.

1 7. (original) The memory system of claim 5 further comprising:

2 a second memory component connected to the first address and control bus and to
3 the first clock signal conductor; and
4 a second data bus connected to the first memory controller and to the second
5 memory component, wherein the second data bus uses differential signaling
6 and has a second data bus symbol time that is shorter than the first address
7 and control bus symbol time of the first address and control bus.

1 8. (original) The memory system of claim 5 wherein a first quotient of the first data
2 bus symbol time divided by the first address and control bus symbol time is less
3 than or equal to $1/8$ and a second quotient of the first address and control bus
4 symbol time divided by the first clock signal cycle time is less than or equal to $1/2$.

1 9. (previously presented) A memory system comprising:
2 a first memory controller;
3 a first memory component;
4 a first address and control bus connected to the first memory controller and to the
5 first memory component, the first address and control bus including a
6 plurality of signal conductors that extend from the first memory controller to
7 the first memory component; and
8 a first data bus connected to the first memory controller and to the first memory
9 component, wherein the first memory component includes a first termination
10 structure connected to the first data bus and wherein the first data bus has a
11 first data bus symbol time that is shorter than a first address and control
12 symbol time of the first address and control bus.

- 1 10. (original) The memory system of claim 9 further comprising:
2 a second memory component connected to the first address and control bus; and
3 a second data bus connected to the first memory controller and to the second
4 memory component, wherein the second memory component includes a
5 second termination structure connected to the second data bus and wherein the
6 first data bus symbol time is shorter than the first address and control bus
7 symbol time of the first address and control bus.
- 1 11. (original) The memory system of claim 9 wherein the first memory controller
2 includes a third termination structure connected to the first data bus.
- 1 12. (original) The memory system of claim 9 wherein a quotient of the first data bus
2 symbol time divided by the first address and control bus symbol time is less than or
3 equal to 1/8.
- 1 13. (original) The memory system of claim 9 wherein a calibration process is used to
2 adjust a first termination value of the first termination structure.
- 1 14. (previously presented) A memory system comprising:
2 a first memory controller;
3 a first memory component;
4 a first address and control bus connected to the first memory controller and to the
5 first memory component, the first address and control bus including a
6 plurality of signal conductors that extend from the first memory controller to

7 the first memory component; and
8 a first data bus connected to the first memory controller and to the first memory
9 component, wherein the first memory component includes a first termination
10 structure connected to the first data bus, wherein the first data bus uses
11 differential signaling, and wherein the first address and control bus uses non-
12 differential signaling.

1 15. (original) The memory system of claim 14 further comprising:
2 a second memory component connected to the first address and control bus; and
3 a second data bus connected to the first memory controller and to the second
4 memory component, wherein the second memory component includes a
5 second termination structure connected to the second data bus and wherein the
6 second data bus uses differential signaling.

1 16. (original) The memory system of claim 14 wherein the first memory controller
2 includes a third termination structure connected to the first data bus.

1 17. (original) The memory system of claim 14 wherein a calibration process is used to
2 adjust a first termination value of the first termination structure.

1 18. (previously presented) A memory system comprising:
2 a first memory controller;
3 a first memory component;
4 a first address and control bus connected to the first memory controller and to the
5 first memory component, the first address and control bus including a

6 plurality of signal conductors that extend from the first memory controller to
7 the first memory component; and
8 a first data bus connected to the first memory controller and to the first memory
9 component, wherein the first data bus uses differential signaling and wherein
10 the first memory component accesses a first word stored in the first memory
11 component, the first word being wider than a first data bus width of the first
12 data bus.

1 19. (original) The memory system of claim 18 further comprising:
2 a second memory component connected to the first address and control bus and to
3 the first data bus.

1 20. (original) The memory system of claim 18 further comprising:
2 a second memory component connected to the first address and control bus; and a
3 second data bus connected to the first memory controller and to the second
4 memory component, wherein the second data bus uses differential signaling
5 and wherein the second memory component accesses a second word stored in
6 the second memory component, the second word being wider than a second
7 data bus width of the second data bus.

1 21. (previously presented) A memory system comprising:
2 a first memory controller;
3 a first memory component;
4 a first address and control bus connected to the first memory controller and to the
5 first memory component, the first address and control bus including a

6 plurality of signal conductors that extend from the first memory controller to
7 the first memory component; and
8 a first data bus connected to the first memory controller and to the first memory
9 component, wherein the first memory controller includes a first receive circuit
10 having a first read timing adjustment subcircuit for adjusting a first adjustable
11 read data sampling time point for first read data sampled from the first data
12 bus and wherein the first data bus uses differential signaling.

1 22. (original) The memory system of claim 21 further comprising:
2 a second memory component connected to the first address and control bus; and
3 a second data bus connected the first memory controller and to the second memory
4 component, wherein the first memory controller includes a second receive
5 circuit having a second read timing adjustment subcircuit for adjusting a
6 second adjustable read data sampling time point for second read data sampled
7 from the second data bus and wherein the second data bus uses differential
8 signaling.

1 23. (original) The memory system of claim 21 wherein a calibration process is used to
2 adjust the first adjustable read data sampling time point.

1 24. (original) The memory system of claim 21 wherein the first memory controller
2 contains a first transmit circuit having a first write timing adjustment subcircuit for
3 adjusting a first adjustable write data driving time point for first write data driven
4 on the first data bus.

- 1 25. (previously presented) A memory system comprising:
2 a first memory controller;
3 a first memory component;
4 a first address and control bus connected to the first memory controller and to the
5 first memory component, the first address and control bus including a
6 plurality of signal conductors that extend from the first memory controller to
7 the first memory component; and
8 a first data bus connected to the first memory controller and to the first memory
9 component, wherein the first memory controller component includes a first
10 receive circuit having a first read timing adjustment subcircuit for adjusting a
11 first adjustable read data sampling time point for first read data sampled from
12 the first data bus and wherein the first memory component includes a first
13 termination structure connected to the first data bus.
- 1 26. (original) The memory system of claim 25 further comprising:
2 a second memory component connected to the first address and control bus; and
3 a second data bus connected to the first memory controller and to the second
4 memory component, wherein the first memory controller includes a second
5 receive circuit having a second read timing adjustment subcircuit for adjusting
6 a second adjustable read data sampling time point for second read data
7 sampled from the second data bus and wherein the second memory
8 component includes a second termination structure connected to the second
9 data bus.

1 27. (original) The memory system of claim 25 wherein a calibration process is used to
2 adjust the first adjustable read data sampling time point.

1 28. (original) The memory system of claim 25 wherein the first memory controller
2 includes a first transmit circuit having a first write timing adjustment subcircuit for
3 adjusting a first adjustable write data driving time point for first write data driven
4 on the first data bus.

1 29. (original) The memory system of claim 25 wherein the first memory controller
2 includes a third termination structure connected to the first data bus.

1 30. (previously presented) The memory system of claim 1 further comprising a
2 memory module having the first memory component disposed thereon, and wherein
3 the plurality of signal conductors include, at least in part, conductive traces
4 disposed on the memory module.

1 31. (previously presented) The memory system of claim 5 further comprising a
2 memory module having the first memory component disposed thereon, and wherein
3 the plurality of signal conductors include, at least in part, conductive traces
4 disposed on the memory module.

1 32. (previously presented) The memory system of claim 9 further comprising a
2 memory module having the first memory component disposed thereon, and wherein
3 the plurality of signal conductors include, at least in part, conductive traces
4 disposed on the memory module.

1 33. (previously presented) The memory system of claim 14 further comprising a
2 memory module having the first memory component disposed thereon, and wherein
3 the plurality of signal conductors include, at least in part, conductive traces
4 disposed on the memory module.

1 34. (previously presented) The memory system of claim 18 further comprising a
2 memory module having the first memory component disposed thereon, and wherein
3 the plurality of signal conductors include, at least in part, conductive traces
4 disposed on the memory module.

1 35. (previously presented) The memory system of claim 21 further comprising a
2 memory module having the first memory component disposed thereon, and wherein
3 the plurality of signal conductors include, at least in part, conductive traces
4 disposed on the memory module.

1 36. (previously presented) The memory system of claim 25 further comprising a
2 memory module having the first memory component disposed thereon, and wherein
3 the plurality of signal conductors include, at least in part, conductive traces
4 disposed on the memory module.